

**Gold King Mine Release
Sampling and Analysis Plan/Quality Assurance Project Plan**

To: Dan Wall, David Romero
From: Mark Blanchard
CC: Joyce Ackerman
TDD#: 0001/1508-04
Date: 9/19/2015
DCN: W0267.1E.00550
Re: Addendum 5 to Gold King Mine Release SAP/QAPP – Mine Adit
Characterization Sampling

Comments: This is Addendum 5 to the Gold King Mine Release SAP/QAPP. This Addendum provides the following:

1. Written description of tasking for sample collection at the Gold King Mine adit.
2. Table 1 - Testing methods designated for the surface water and sediment samples from the Gold King Mine adit based on discussions held between the EPA and La Plata County officials.
3. Table 2 - Sample container descriptions and preservative types identified by the subcontracted laboratory, Test America, for the sampling.

Purpose and Scope

START will collect surface water and sediment/sludge samples from the Gold King Mine adit. These samples will be collected from as close as is safely accessible to the mine adit opening in order to characterize surface water and sediment sourced by the Gold King Mine.

The anticipated sample location is:

| Sample ID | Sample Location Description | Latitude / Longitude |
|-----------|---|---------------------------------|
| CC06 | Gold King 7 Level mine adit. Sample water from flow leaving the adit. | 37 53 40.50 N 107 38 18.09 W |

If the sample location becomes inaccessible, an alternate sampling location which provides similarly adequate or sufficient data as the original will be identified and sampled based upon the best judgment of the inspector/sampler, if necessary.

The data quality objective (DQO) will be estimation based as opposed to decision based. In other words, the DQO will be presence/absence without any prescribed action.

Sampling and Field QC Procedures

Sampling will include collection of surface water flowing from the adit and sediment/sludge. Sample collection procedures will follow those in ERT SOP 2013 and ERT SOP 2016. In addition, START will collect one 500 ml sample of the dry shotcrete material that will be used as part of the stabilization activities at the site.

START personnel will work with EPA and La Plata County to coordinate the sampling effort. La Plata County personnel will collect split samples to be analyzed by an analytical laboratory directed by La Plata County.

Samples will be analyzed for the parameters listed on Table 1. The methods listed on Table 1 were identified by La Plata County. The analytical laboratory anticipated for analyzing the EPA portion of the split samples, Test America, will be directed to match the methods (or equivalent) utilized by the La Plata County contracted laboratory. Sample container descriptions and preservative types identified by Test America are provided on Table 2.

Table 1 – EPA Testing Method Recommendation for Water and Soil (Sediment) Samples

| Water Column | | |
|------------------------|---------------------|----------------------------------|
| Parameter | Test Method | Notes |
| NO ₂ | SM4500/300.0 | |
| NO ₃ | SM4500/300.0 | |
| TKN | 351.2 or 4500 NorgB | |
| NH ₃ | 4500NHCD | |
| 2,3,7,8-TCDD | 1613 | |
| PCBs | 608/8081 + 608/8082 | |
| Total Chromium | 200.5/200.8/200.9 | |
| Chromium-6 | 7196A or 3500 CRD | |
| VOCs | 524.2 | |
| Cyanide | 4500 CNE | |
| Uranium | 200.8 | |
| Radium 226/228 | 7500 RA B/D | |
| Gross Alpha | 7110B | |
| Gross Beta | 7110B | |
| Uranium 238 | 908.0 | |
| Semi-volatile | 625 | |
| Sediment | | |
| Parameter | Test Method | Notes |
| NO ₂ | SM4500/300.0 | |
| NO ₃ | SM4500/300.0 | |
| NH ₃ | 4500NHCD | |
| Dioxins | 1613 | |
| PCBs | 608/8081 + 608/8082 | |
| Cyanide | 4500 CNE | |
| VOCs | EPA Method 24 | |
| Uranium | ASTM C1255 | |
| Radium 226/228 | Lab Recommendation | Radon-Emanation (for radium 226) |
| Gross Alpha | Method 9310 | |
| Gross Beta | Method 9310 | |
| Uranium 238 | Lab Recommendation | α-Spectrometry |
| Semi-volatile | 8270C | |
| Thallium | Lab Recommendation | ICP-MS |
| Thallium nitrate | Lab Recommendation | Atomic absorption spectroscopy |
| Thallium soluble salts | Lab Recommendation | Atomic absorption spectroscopy |

Add Temp, pH, Conductivity and DO

D. Ran 9/21/10

Table 2 – Sample Containers and Preservatives

| Bottle Type Description | Preservative | Matrix | Comments |
|--|---------------------|---------------|--------------------------|
| Soil jar 8 oz | None | Solid | PCB/SVOC |
| Soil jar 8 oz | None | Solid | Cyanide/N/N/NH3/TKN |
| Soil jar 4 oz | None | Solid | Total Cr/Cr+6 |
| Soil jar 8 oz | None | Solid | Rad226/228/AO1Ur/A01Th/U |
| Soil jar 2 oz - plastic | None | Solid | VOCs |
| VOA vial 40 ml- 5 ml DI water/stir bar | DI Water | | |
| VOA vial 40 ml – 5 ml MeOH | Methanol | | |
| Soil jar 8 oz | None | Solid | Dioxins |
| Soil jar 8 oz | None | Solid | Total Metals/Hg |
| Plastic 1 liter – Nitric Acid | Nitric acid | Water | Radiological |
| Amber Glass 1 liter – unpreserved | None | Water | PCB/SVOC |
| Amber Glass 1 liter – unpreserved | None | Water | Dioxins |
| Plastic 250 ml – with Nitric Acid | Nitric acid | Water | Total metals |
| Plastic 250 ml – with Sulfuric Acid | Sulfuric acid | Water | NH3/TKN |
| Plastic 250 ml – with Sodium Hydroxide | Sodium hydroxide | Water | Cyanide |
| Plastic 250 ml – unpreserved | None | Water | N/N/Cr+6 |
| VOA vial 40 ml – Hydrochloric acid | Hydrochloric acid | Water | VOCs |
| VOA vial 40 ml – Hydrochloric acid | Hydrochloric acid | Water | Trip Blank |